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(54) **BEARING HOUSING OF AN EXHAUST-GAS TURBOCHARGER**

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F01D 25/24 (2006.01)
F04D 25/02 (2006.01)
F04D 29/056 (2006.01)

(52) **U.S. Cl.**

CPC **F01D 25/16** (2013.01); **F01D 25/162** (2013.01); **F01D 25/24** (2013.01); **F04D 25/02** (2013.01); **F04D 25/024** (2013.01); **F04D 29/056** (2013.01); **F05D 2220/40** (2013.01)

(58) **Field of Classification Search**

CPC F01D 25/16; F01D 25/162; F01D 25/24; F04D 25/02; F04D 25/024; F04D 29/056; F05D 2220/40

See application file for complete search history.

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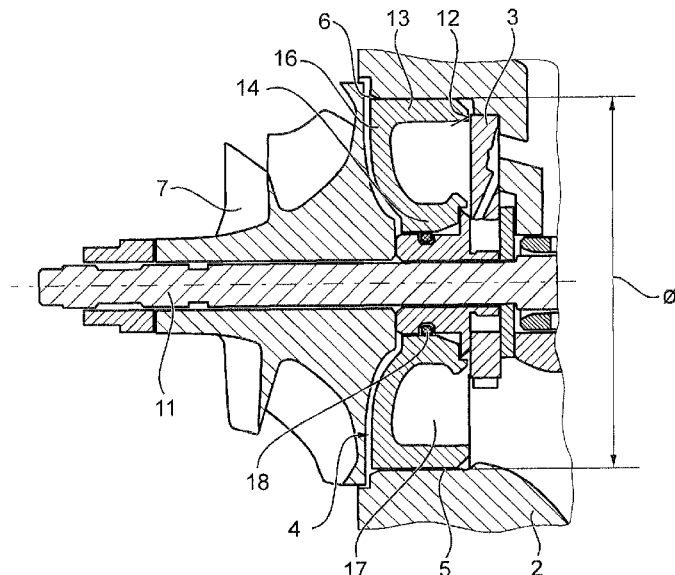
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(57) **ABSTRACT**

A bearing housing (1) of an exhaust-gas turbocharger, having a housing body (2) in which an axial bearing (3) is arranged, and a compressor-side housing cover (4) which can be fixed in a compressor-side housing opening (6) via a fastening device (5). The fastening device (5) is a non-positively locking fastening device.

8 Claims, 2 Drawing Sheets



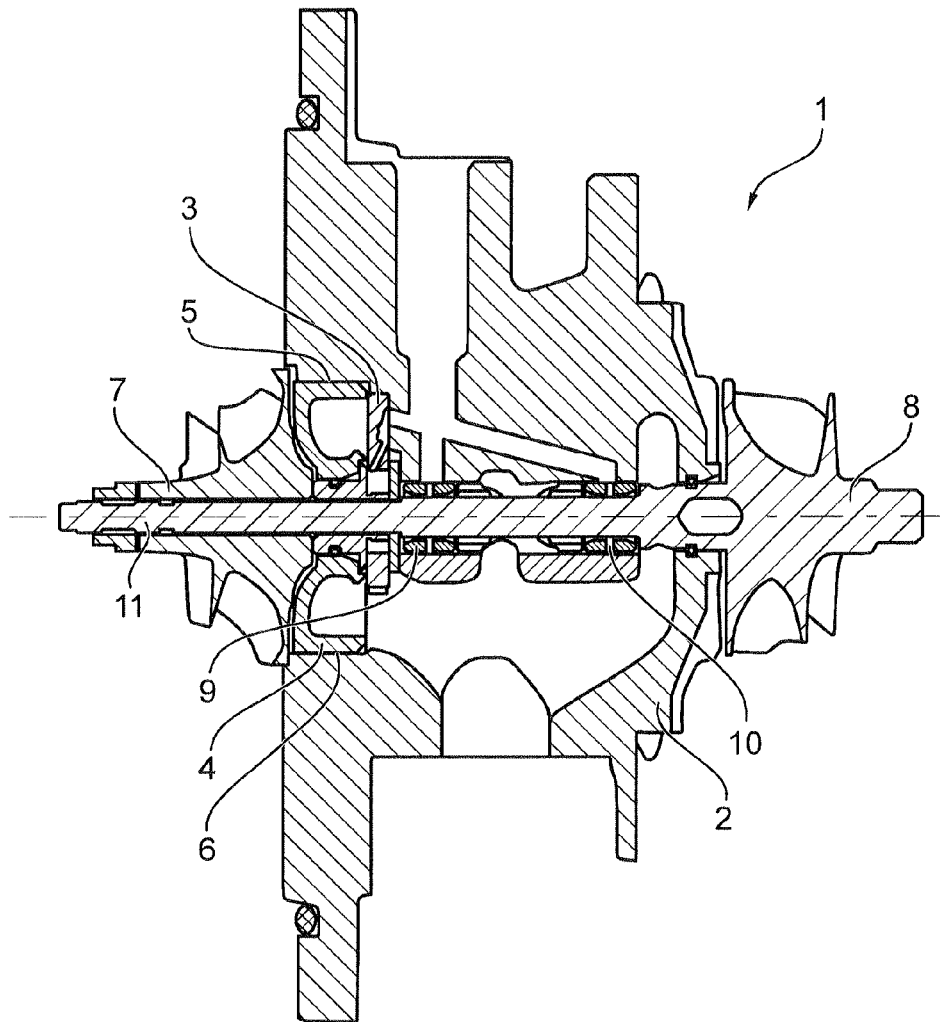


Fig.1

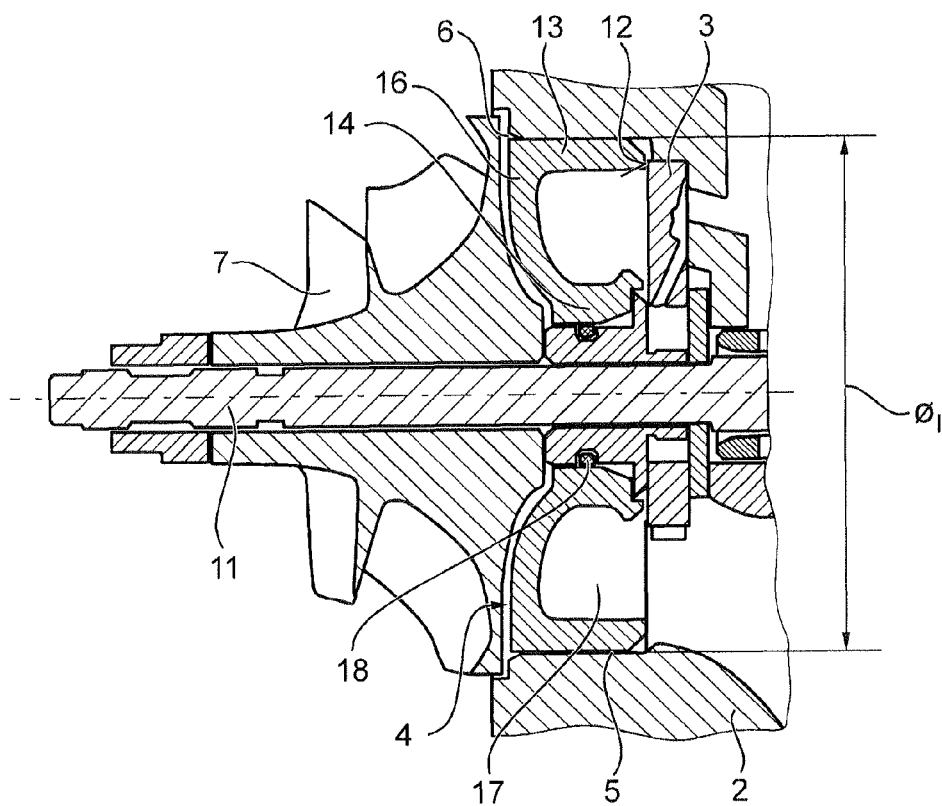


Fig. 2

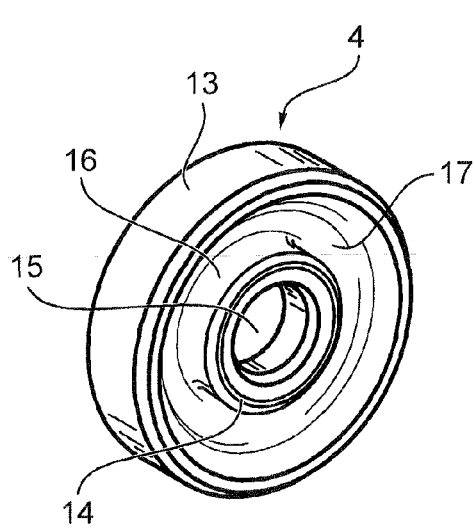


Fig. 3

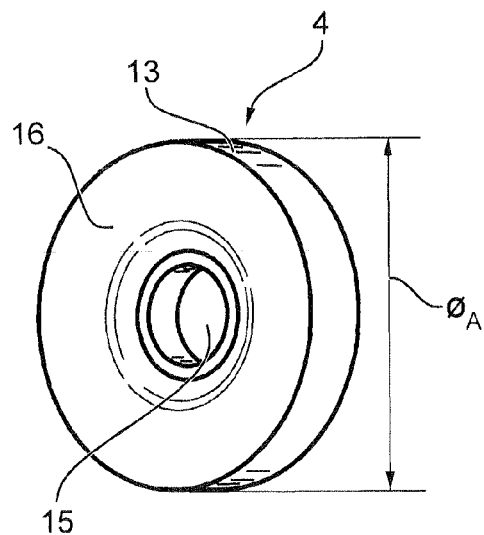


Fig. 4

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**BEARING HOUSING OF AN EXHAUST-GAS
TURBOCHARGER****CROSS-REFERENCE TO RELATED
APPLICATIONS**

Not Applicable.

**STATEMENT REGARDING FEDERALLY
SPONSORED RESEARCH OR DEVELOPMENT**

Not Applicable.

**THE NAMES OF THE PARTIES TO A JOINT
RESEARCH AGREEMENT**

Not Applicable.

**INCORPORATION-BY-REFERENCE OF
MATERIAL SUBMITTED ON A COMPACT DISC
OR AS A TEXT FILE VIA THE OFFICE
ELECTRONIC FILING SYSTEM (EFS-WEB)**

Not Applicable.

**STATEMENT REGARDING PRIOR
DISCLOSURES BY THE INVENTOR OR BY A
JOINT INVENTOR**

Not Applicable.

BACKGROUND OF THE INVENTION**1. Field of the Invention**

The invention relates to a turbocharger turbine.

2. Description of the Related Art

Bearing housings of said type have a housing cover which, in the case of a known design, is fixed to the housing body of the bearing housing by means of a screw connection or a positively locking tapered ring connection.

In contrast, it is an object of the present invention to provide a bearing housing whose components can be assembled in a time-saving and simple manner.

BRIEF SUMMARY OF THE INVENTION

The fact that the fastening device acts in a non-positively locking manner results in time-saving, screw-free and simple assembly of the components of the bearing housing.

The subclaims relate to advantageous refinements of the invention.

Aside from the time-saving, screw-free and simple assembly of the housing cover on the bearing housing body, a further result is likewise simple assembly of the axial bearing and the possibility of expedient production of the components, because simple geometries can be selected for these.

Furthermore, a relatively large volume for the collection and discharge of the oil is obtained in the oil free space of the housing cover on account of the small spatial requirement of the housing cover as a result of the connecting elements not being required.

**BRIEF DESCRIPTION OF THE SEVERAL
VIEWS OF THE DRAWINGS**

Further details, advantages and features of the present invention will emerge from the following description of an exemplary embodiment on the basis of the drawing, in which:

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FIG. 1 shows a schematically simplified view of a bearing housing body group of an exhaust-gas turbocharger which is provided with the bearing housing according to the invention,

FIG. 2 shows a schematically simplified illustration of a housing cover according to the invention in the state in which it is mounted on the bearing housing, and

FIGS. 3 and 4 show perspective illustrations of a rear and front side, respectively, of the housing cover according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows a bearing housing I according to the invention in the installed state in a bearing housing body group of an exhaust-gas turbocharger. Said body group has, in addition to the bearing housing 1 with its housing body 2 and an axial bearing 3, a compressor-side housing cover 4 which, in the assembled state illustrated in FIG. 1, closes off a housing opening 6, for which purpose the housing cover 4 can be fixed by means of a fastening device 5 which will be described below in more detail on the basis of FIGS. 2 to 4.

The body group also has a compressor wheel 7, a turbine wheel 8, a compressor-side bearing arrangement 9, a turbine-side bearing arrangement 10 and a shaft 11 on which the compressor wheel 7 and the turbine wheel 8 are mounted. If a compressor housing and a turbine housing, which are not illustrated in FIG. 1, and possibly further attachment elements are added to said body group, this yields an exhaust-gas turbocharger with the conventional components, which however need not be described in detail for the purpose of explaining the present invention.

FIG. 2 shows, in an enlarged illustration, the housing body 2 of the bearing housing 1 and the housing cover 4 in the state in which it has been installed into the housing opening 6. The fastening device is designed as a non-positively locking fastening device 5, such that the fixing of the housing cover 4 can take place in an extremely simple manner by virtue of the housing cover 4 being pressed into the housing opening 6. The housing cover 4 preferably has for this purpose an outer diameter ϕ_A which is larger than the inner diameter ϕ_I of the housing opening 6. It is particularly preferable here for the housing cover 4 to be composed of material that can be deformed when said housing cover is pressed in, for example of sheet metal.

After the mounting of the housing cover 4 in the housing body 2 of the bearing housing 1, said housing cover bears against the axial bearing 3, as can be seen from FIG. 2. In said position, said housing cover holds the axial bearing 3 fixed without further components. For this purpose, the axial bearing 3 has an abutment surface 12 which faces toward the housing opening 6 and with which the housing cover 4 comes into engagement after being inserted into the housing opening 6.

As can be seen from a juxtaposition of FIGS. 2 to 4, the housing cover 4 has an outer retaining ring 13 and, arranged concentrically with respect thereto, an inner shaft passage ring 14 which delimits a shaft passage opening 15. As is shown by the juxtaposition of FIGS. 2 and 3, the retaining ring 13 and the shaft passage ring 14 delimit an oil free space 17 into which the oil centrifuged from a seal bush of the compressor-side bearing arrangement 9 can pass without resistance and be discharged. The static sealing may take place directly between the bearing housing body 2 and the housing cover 4 or by means of an O-ring 18 or similar sealing devices.

Even though secure fixing of the housing cover 4 in the housing opening 6 is possible without further components, it

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is possible in principle for further assistive means to be provided which further improve the connection stability and sealing action. These may be for example friction-promoting structures (such as for example roughened portions) on the outer surface of the outer ring **13**, or else an additional positively locking connecting device, though these are not shown in detail in the figures.

in addition to the above written disclosure of the invention, reference is hereby explicitly made to the diagrammatic illustration of the invention in the figure.

LIST OF REFERENCE SYMBOLS

- 1** Bearing housing
- 2** Housing body
- 3** Axial bearing
- 4** Housing cover
- 5** Fastening device
- 6** Housing opening
- 7** Compressor wheel
- 8** Turbine wheel
- 9** Compressor-side bearing arrangement
- 10** Turbine-side bearing arrangement
- 11** Shaft
- 12** Abutment surface
- 13** Retaining ring
- 14** Shaft passage ring
- 15** Shaft passage recess
- 16** End wall
- 17** Oil free space
- 18** O-ring
- \square_r Inner diameter
- \square_A Outer diameter

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The invention claimed is:

- 1.** A bearing housing (**1**) of an exhaust-gas turbocharger, having
 - a housing body (**2**) in which an axial bearing (**3**) is arranged, and
 - a compressor-side housing cover (**4**) which can be fixed in a compressor-side housing opening (**6**) by means of a fastening device (**5**), wherein the fastening device (**5**) is a non-positively locking fastening device.
- 2.** The bearing housing as claimed in claim **1**, wherein the housing cover (**4**) has an outer diameter ϕ_A , wherein the bearing housing (**1**) has an abutment surface (**12**) adapted for abutment contact with said housing cover (**4**), and wherein said housing cover (**4**) bears with its outer diameter (**100_A**) against the abutment surface (**12**).
- 3.** The bearing housing as claimed in claim **2**, wherein the housing cover (**4**) has a retaining ring (**13**) and a concentric inner shaft passage ring (**14**), which rings are connected to one another via an end wall (**16**).
- 4.** The bearing housing as claimed in claim **3**, wherein the retaining ring (**13**), the shaft passage ring (**14**) and the end wall (**16**) delimit an oil free space (**17**).
- 5.** The bearing housing as claimed in claim **3**, wherein the retaining ring (**13**) is provided with a friction-promoting roughened portion on the outer circumference of ring (**13**).
- 6.** The bearing housing as claimed in claim **1**, wherein the housing cover (**4**) is a sheet-metal part.
- 7.** The bearing housing as claimed in claim **1**, wherein a sealing element (**18**) is provided between the bearing housing body (**2**) and the housing cover (**4**).
- 8.** The bearing housing as claimed in claim **1**, wherein a positively locking fastening device is additionally provided between the bearing housing body (**2**) and the housing cover (**4**).

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